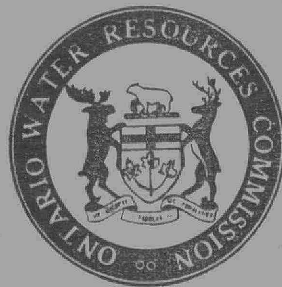
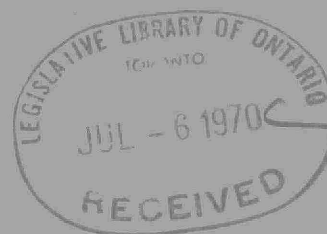


CA2 ON  
WR 610  
1970  
B65



*O.W.R.C.*  
*Water Pollution*  
*Survey*



THE  
ONTARIO WATER RESOURCES  
COMMISSION  
WATER POLLUTION SURVEY  
of the  
CITY OF BROCKVILLE

1970

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CA20N  
WR 610  
1970  
B65

THE  
ONTARIO WATER RESOURCES  
COMMISSION  
Report on a  
Water Pollution Survey  
of the  
CITY OF BROCKVILLE  
in the  
COUNTY OF LEEDS AND GRENVILLE  
DIVISION OF SANITARY ENGINEERING  
DISTRICT ENGINEERS BRANCH  
1970

WATER POLLUTION SURVEY

of the

CITY OF BROCKVILLE

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## WATER POLLUTION SURVEY

of the

### CITY OF BROCKVILLE

#### INTRODUCTION

In 1965 a Water Pollution Survey was carried out in the City of Brockville to assess the sanitary quality of the St. Lawrence River and its tributaries. A subsequent report, issued in 1966, presented four (4) recommendations which were considered important to pollution abatement in this municipality. During 1969, several follow-up investigations were made to determine what action had been taken on the above-mentioned recommendations.

Local officials interviewed during these investigations included:

Mr. W.M. Metcalfe, City Engineer;  
Mr. D. Snider, Assistant City Engineer;  
Mr. B. Young, Chief Public Health Inspector;  
Mr. J. Warren, Public Health Inspector.

#### PREVIOUS RECOMMENDATIONS AND ACTION TAKEN

The four recommendations presented in the 1966 report were as follows:

- 1) "The programme presently being pursued at Brockville to separate combined sewage flows should be continued to exclude contaminated flows from storm sewers. This report indicates areas where such action is necessary."

Water samples collected from watercourses within the City of Brockville continued to show varying degrees of pollution as a result of sewage discharges to the streams from storm sewers. A letter from Brockville dated October 1, 1969, indicated that, "on September 23rd, By-Law No. 82-69 was passed authorizing the procuring of a report on the separation of the storm and sanitary sewer system." A discussion of the effect of storm sewer discharges on watercourses within this municipality is discussed later in this report.

- 2) "Attempts should be made either to provide sanitary sewer connections or to ensure the installation of adequate sewage disposal facilities at a number of private river front properties."

The success in eliminating inadequate sewage disposal facilities at several private river front properties was not given thorough examination during these follow-up investigations. It is believed that some of the sewage discharges at properties along the King Street East area have been eliminated. A number of domestic waste discharges to the St. Lawrence River were also evident in the Hartley Street area at the time of the 1965 survey.

- 3) "The firms of Phillips Cables Limited, John B. Stetson Company Limited and Ault Creamery Limited should ensure that their inadequately treated wastes do not have access to the pertinent watercourses."

Sample results and visual observations revealed that contaminated discharges from the Phillips Cables Limited continued to gain access to Butler's Creek and to Bayview Creek. In addition to the polluttional effects of these discharges, they have also contributed to significant aesthetic nuisances to property owners, particularly in the Bayview Creek area. It is believed that all contaminated discharges from the John B. Stetson Company Limited and the Ault Creamery Limited have been directed to the municipal sanitary sewer system.

- 4) "Contaminated waste discharges from the Wrightway Laundry and Cleaners premises should be excluded from the St. Lawrence River."

This firm has provided plumbing alterations to permit all of its wastes to be pumped to the municipal sanitary sewer system.

#### INVESTIGATIONS

##### Municipal Sewage Works

The 3.75 MGD primary treatment, water pollution control plant which serves the City of Brockville was placed in operation in early 1965. Treatment at this plant includes screening, settling, sludge digestion and effluent chlorination. Chlorination of the plant effluent on a year-round basis was initiated following an OWRC study of downstream water quality in 1967 and 1968.

A summary of sewage flows for 1965-66-67-68 and 69, including total monthly flows, average daily flows, maximum daily flows, minimum daily flows, and bypassed sewage flows are appended as Appendix I to this report. Appendix II of the report illustrates the population to sewage flow trends during the past several years. It should be noted that flow measurement equipment at the sewage works was not properly calibrated in 1965, consequently the pumpage figures for that year have not been included in subsequent calculations.

The average daily flow through the treatment plant from 1965 to 1969 was 3.34 MGD which was 88% of the design capacity of the plant. It is interesting to note that flows in excess of the design capacity of the plant were experienced during 39 of the 48 months of this period.

Estimates of the volume of raw sewage bypassed at the Water Street pumping station were commenced in September, 1967. Records indicate that raw sewage was bypassed to the St. Lawrence River on 24 of the 28 months between September, 1967 and December, 1969. The total estimated bypassed flow for this period was 32.69 MG, which represents an average discharge of raw sewage of some 1.17 MG per month.

It is also interesting to note that total monthly flows through the treatment plant exceeded total monthly municipal water consumption on eight months between 1966 and 1969. This indicates that there is a considerable degree of

groundwater infiltration and/or storm water gaining access to the sanitary sewer system.

Refuse Disposal Site

During 1968 attention was drawn to a water pollution hazard at the municipal refuse disposal site. Investigations together with water samples revealed that the refuse site was contributing to stream pollution. An OWRC report dated April 10, 1969, was forwarded to the municipality with the following recommendations:

- 1) "Immediate steps should be taken at the new refuse disposal site to provide the necessary water pollution control measures."
- 2) "The City of Brockville should implement a programme at the old refuse disposal site to control stream pollution from this area."

A letter confirming receipt of the above report was forwarded to the OWRC on June 17, 1969; however, no further information concerning water pollution abatement at the municipal refuse site has been received since that time. It is presumed that these recommendations are receiving appropriate attention.

The operation of this refuse disposal site was also investigated by staff of the Leeds, Grenville and Lanark District Health Unit and the Waste Management Section of the Department of Health. A subsequent report from the latter



- 6 -

REFUSE DISPOSAL SITE

- Upstream

Refuse in Stream -



- Downstream

agency presented six recommendations to the municipality for improvements to the operations at this disposal site.

#### SAMPLING PROCEDURES

Samples were collected for chemical analyses and/or bacteriological examinations from sewer discharges and from watercourses. Sewer outfalls to Butler's Creek which revealed contaminated discharges during previous investigations were inspected and samples were collected where flows were noted. There was no significant precipitation at the time of sampling and the discharges to the watercourses were dry weather flows.

Chemical samples were submitted to the OWRC Laboratories in Toronto. Bacteriological samples were delivered to the Department of Health, Regional Laboratory, in Kingston within 24 hours from the time of sampling.

#### WATER QUALITY OBJECTIVES

An explanation of the significance of the various laboratory analyses used by the OWRC has been included in previous reports. The objectives for surface water quality in Ontario are included briefly as follows:

- 1) Coliform count - not greater than 2400 coliforms per 100 ml.

It should be noted that health authorities frequently use an objective of not greater than 100 faecal coliform organisms for bathing areas.

- 2) Biochemical Oxygen Demand - not greater than 4 ppm.

- 3) Phenols - average 2 ppb  
- maximum 5 ppb

SAMPLE RESULTS

The results of samples collected are appended to this report as follows:

- Appendix III - (A) Butler's Creek  
(B) Buell's Creek  
(C) Bayview Creek

- Appendix IV - OWRC - Water Quality  
Monitoring Station - Butler's  
Creek at Highway No. 2 (1967-68-69)

Butler's Creek

The results of samples collected of dry weather flows from storm sewer outfalls to Butler's Creek revealed contaminated waste discharges from the following sewers:

<u>Sample Point Number</u>	<u>Description</u>
B-0.01W	Storm sewer outfall to north side of creek-opposite John Street.
B-0.37W	Storm sewer outfall to north side of creek on east side of Beecher Street.
B-0.42WI	Storm sewer outfall west of Beecher Street.
B-0.47WI	Storm sewer outfall to west side of creek at south side of Church Street.
B-0.80D	Open ditch to west side of creek at Brock Street.
B-0.92W	Storm sewer outfall to east side of creek at north side of Brock Street.



<u>Sample Point Number</u>	<u>Description</u>
B-1.18W	Storm sewer outfall to south side of creek on west side of Perth Street.
B-160W	Storm sewer outfall to north side of creek on west side of CPR bridge.
B-1.74W-1	Storm sewer outfall to north side of creek on west side of Park Street.
B-1.74W-2	Storm sewer outfall to south side of creek on west side of Park Street.
B-1.89W-2	Storm sewer outfall to south side of creek on west side of Ormond Street.
B-2.67W	Storm sewer outfall to north side of creek at First Avenue.

The results of samples collected in Butler's Creek, downstream from these sewage discharges, revealed significant contamination throughout its course.

The results of samples collected at the OWRC stream monitoring station on Butler's Creek at Highway No. 2 are included as Appendix IV to this report. Some 53% of the samples collected over a three year period had coliform concentrations in excess of the OWRC objective of not greater than 2400 coliforms per 100 ml. Industrial discharges from Phillips Cables Limited which gain access to Butler's Creek via two storm sewers west of Beecher Street remained a source of pollution to this watercourse.

The condition of Butler's Creek was drawn to the public's attention in 1969 when local residents invited a number of municipal officials to the Front Avenue area to observe the watercourse.

# The Recorder and Times



Butler's Creek  
at  
Stewart Boulevard

THURSDAY, JULY 31, 1969.

Fear Water Pollution:

## **Debris In Butler's Creek Is Causing Much Concern**

SATURDAY, AUGUST 2, 1969.

Invited To "Smell In":

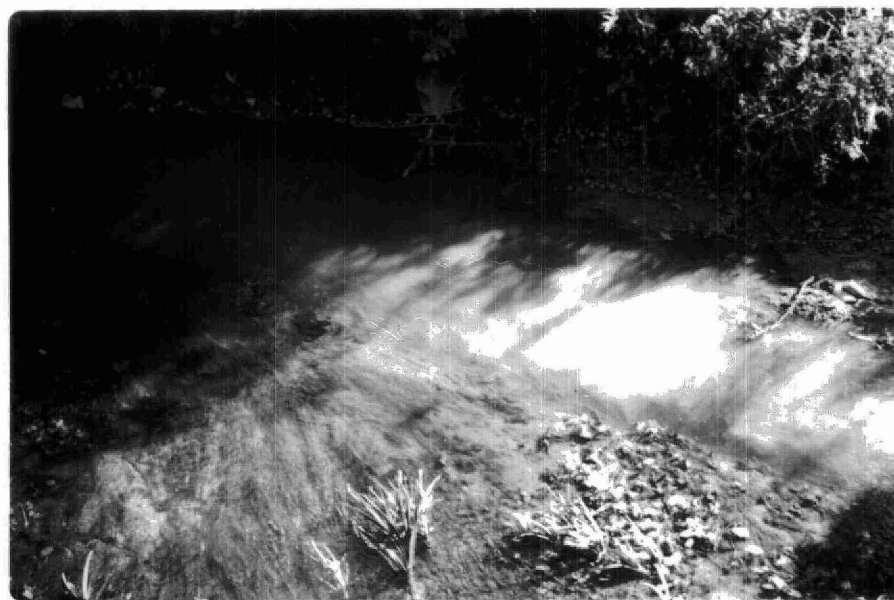
## **Neighbors Call In City Fathers To View Creek**

Dye Test of  
Storm Sewer  
Discharge to  
Butler's Creek  
at Park Street





Butler's Creek at Church Street



Discolouration of Butler's Creek

Downstream from Church Street

Caused by Discharges from Phillips Cables Limited

Buell's Creek

High coliform concentrations continued to be evident in Buell's Creek. There has been less public concern about pollution of Buell's Creek. This may, in part, be attributed to improvements to stream flow as a result of the Cataraqui Region Conservation Authority dam, located on this stream near the city limits. Two previously located sewer outfalls, known to discharge contaminated wastes are located as follows:

<u>Sample Point Number</u>	<u>Description</u>
BB-1.57W	Storm sewer outfall to west side of creek-east of Stewart Blvd.
BB-1.70W	Storm sewer outfall to east side of creek-west of Ferguson Drive and south of Central Avenue.

Bayview Creek

Complaints have been received by the OWRC and the local health authorities concerning contaminated discharges to Bayview Creek. Investigations and sample analyses revealed that the source of these complaints was an industrial sewer from Phillips Cables Limited. Copper concentrations in excess of the OWRC objective of 1.0 ppm were evident in the discharges from this sewer on April 10, 1969. Material which resembled the plastic coating from wire was evident downstream from this sewer outfall. Oil has also been observed in the discharges from this sewer.

Reportedly steps are being taken at the above industry to eliminate the contaminated discharges to Bayview Creek (letter dated December 15, 1969).

#### SUMMARY AND CONCLUSIONS

A municipal pollution survey was conducted in the City of Brockville in 1965. During 1969, a number of follow-up investigations were made to assess the action taken on the 1965 recommendations.

Investigations revealed that the primary sewage treatment plant which commenced operations in 1965, is now operating at 88% design capacity. In view of the rapid growth rate of urban areas in recent years it is considered that attention should be given to the need for increasing the capacity of sewage works at least three years in advance of when the design capacity of the treatment plant is estimated to occur. This consideration was advanced at the time of a meeting between the City of Brockville Works Committee and the OWRC on January 19, 1970, and in an OWRC sewage works inspection report dated December 10, 1969. Failure of a municipality to initiate a positive programme in this regard could result in the OWRC withholding approval of watermain and sewer extensions in a municipality. In this instance it appears that the plant is becoming hydraulically overloaded primarily as a result of combined sewage flows from the municipality. This results in the bypassing of raw sewage to streams within Brockville and to the St. Lawrence River, particularly during periods of heavy precipitation. In this regard the City of Brockville should

curtail development in those areas of the city which would aggravate this problem, until such time as the pertinent sewers are improved. The city should also have a positive programme for locating and eliminating existing improper connections to the municipal storm sewer system.

Observations and sample analyses revealed that contaminated sewage flows from the combined sewer system continued to be discharged to Butler's Creek from storm sewer outfalls. Many residents have complained about pollution and the adverse aesthetic conditions in this watercourse. Sample analyses indicate that Butler's Creek does not meet bacteriological quality objectives for Ontario at least 50% of the time.

The City of Brockville should endeavour to reduce the hydraulic load on the treatment plant and the by-passing of raw sewage to open watercourses, through the separation of combined sewers. A positive programme for eliminating contaminated discharges to watercourses within this municipality should be commenced without delay. The pending report on sewer overflows now being prepared by the city's consulting engineer should provide the basis for this programme.

Industrial waste discharges have been a source of pollution to both Butler's Creek and Bayview Creek. The development of an industrial park north of Parkdale Avenue may create a condition which could lead to similar industrial contamination of Buell's Creek if appropriate preventative measures are not taken. The City of Brockville should consider

establishing a Sewer Use By-Law to control the hazards to stream quality and sewage works operation.

RECOMMENDATIONS

- 1) The City of Brockville should establish a positive programme for the separation of combined sewage flows and the exclusion of contaminated wastes from storm sewers.
- 2) The advantages of a Sewer Use By-Law should be given careful consideration by this municipality in an effort to protect both surface water quality and the operation of its water pollution control plant.
- 3) As previously recommended the City of Brockville should implement appropriate water pollution control measures at both the existing and the old refuse disposal sites.

Report Prepared by

  
W.C. Stevens, Technician,  
Division of Sanitary Engineering.

WCS/wab  
Attach.

APPENDIX I  
CITY OF BROCKVILLE  
SEWAGE FLOWS (MG)

<u>MONTH</u>	<u>TOTAL</u>	<u>AVERAGE DAY</u>	<u>MAXIMUM DAY</u>	<u>MINIMUM DAY</u>	<u>QUANTITY</u> <u>BY-PASSED</u>	<u>PUC PUMPAGE</u>
<u>1965</u>						
Jan.	51.86	1.67	2.25	1.40		100.34
Feb.	-	-	-	-		95.11
March	-	-	-	-		119.89
April	48.74	1.63	3.76	2.70		150.11
May	75.91	2.45	3.00	1.67		162.10
June	58.20	1.88	2.38	1.99		174.37
July	37.76	1.22	2.96	1.05		144.84
Aug.	65.60	2.11	4.06	1.13		135.85
Sept.	68.26	2.28	5.65	1.39		125.21
Oct.	74.93	2.42	4.16	1.34		116.22
Nov.	94.86	3.16	5.12	1.80		114.72
Dec.	92.55	2.99	4.09	2.38		113.87
<u>TOTAL</u>	668.67					1,552.61
<u>AVERAGE</u>	66.86	2.81				129.38
<u>1966</u>						
Jan.	91.66	2.96	4.37	2.00		126.94
Feb.	88.49	3.16	5.99	1.50		112.68
March	143.46	4.63	6.86	3.56		115.08
April	110.30	3.68	4.07	3.01		111.60
May	90.86	2.93	3.80	2.64		111.06
June	81.98	2.73	3.51	2.31		124.00
July	81.14	2.62	3.07	2.06		143.92
August	89.75	2.90	3.63	2.26		131.54
Sept.	87.15	2.91	3.87	2.33		122.51



<u>MONTH</u>	<u>TOTAL</u>	<u>AVERAGE DAY</u>	<u>MAXIMUM DAY</u>	<u>MINIMUM DAY</u>	<u>QUANTITY</u> <u>BY-PASSED</u>	<u>PUC PUMPAGE</u>
<u>1966 .. Continued</u>						
Oct.	86.21	2.78	3.38	2.22		124.27
Nov.	96.43	3.21	5.04	2.28		116.32
Dec.	110.41	3.56	5.82	2.53		119.57
<u>TOTAL</u>	1157.84					1,463.27
<u>AVERAGE</u>	96.48	3.17				121.93
<u>1967</u>						
Jan.	103.71	3.35	5.69	2.75	-	124.19
Feb.	85.85	3.07	3.50	2.50	-	118.06
March	113.90	3.67	5.44	2.79	-	121.60
April	127.30	4.24	5.34	3.46	-	119.70
May	108.96	3.52	4.32	2.94	-	114.00
June	114.23	3.81	4.15	2.58	-	121.46
July	117.12	3.78	4.03	2.58	-	130.34
Aug.	92.58	2.99	4.03	2.58	-	132.00
Sept.	97.63	3.25	5.08	2.67	2.15	119.19
Oct.	114.12	3.68	5.34	2.81	4.00	119.69
Nov.	121.98	4.06	5.55	3.32	2.03	112.50
Dec.	102.98	3.32	4.83	2.32	1.10	113.91
<u>TOTAL</u>	1300.36				9.28	1,446.64
<u>AVERAGE</u>	108.36	3.56			2.32	120.55
<u>1968</u>						
Jan.	108.45	3.50	4.46	2.54	1.25	121.86
Feb.	90.13	3.11	5.42	2.35	3.05	113.90
March	121.54	3.92	6.04	2.37	0.35	123.45
April	127.09	4.24	5.59	2.99	0.00	115.29
May	102.23	3.30	5.20	2.40	1.65	110.42
June	97.11	3.24	4.14	2.25	0.38	111.49

<u>MONTH</u>	<u>TOTAL</u>	<u>AVERAGE DAY</u>	<u>MAXIMUM DAY</u>	<u>MINIMUM DAY</u>	<u>QUANTITY BY-PASSED</u>	<u>PUC PUMPAGE</u>
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1968 .. Continued

July	93.79	3.03	3.68	2.42	0.35	129.56
Aug.	91.34	2.95	3.49	2.41	0.97	120.43
Sept.	85.00	2.83	4.99	2.16	0.00	120.45
Oct.	84.98	2.74	4.41	2.40	0.00	113.06
Nov.	98.41	3.28	5.34	2.34	2.55	101.28
Dec.	110.67	3.57	7.25	2.45	0.32	105.26

<u>TOTAL</u>	1,210.74				10.87	1,386.45
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<u>AVERAGE</u>	100.89	3.31			1.20	115.53
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1969

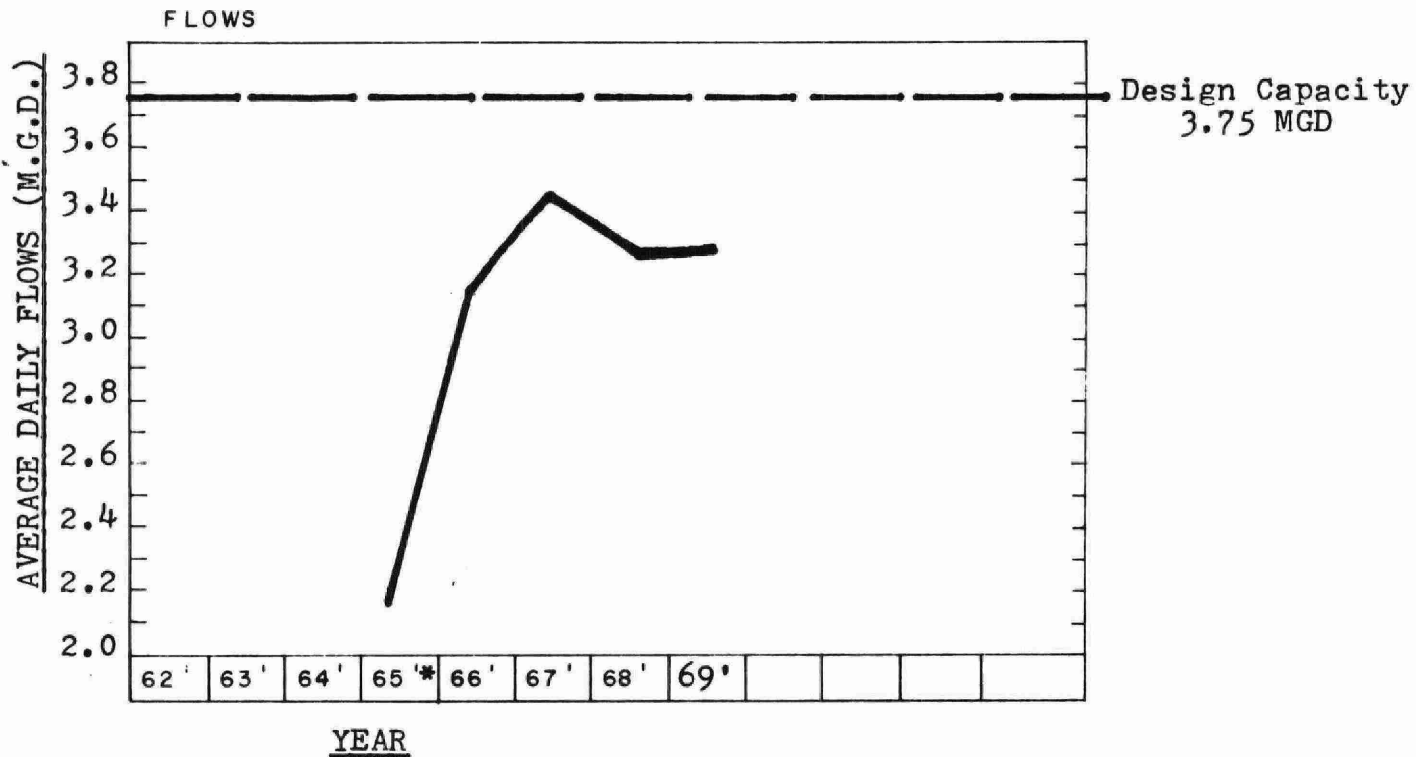
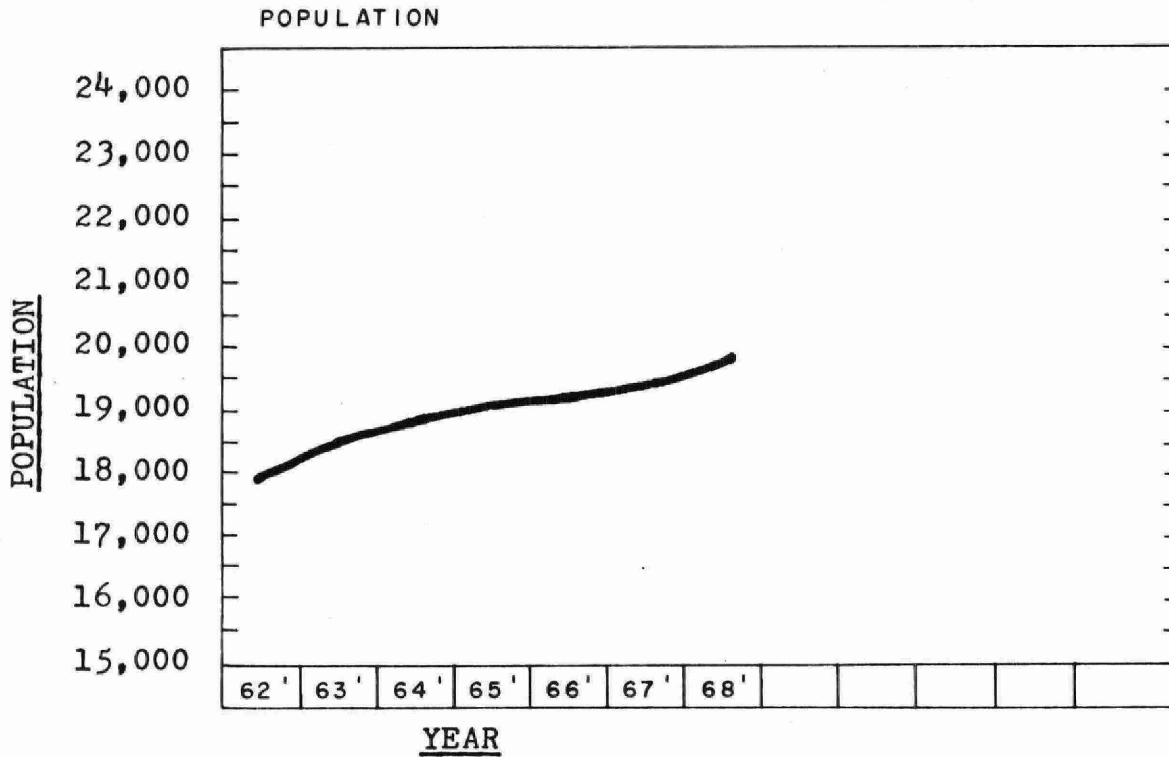
Jan.	92.61	2.99	5.04	2.38	0.35	108.21
Feb.	79.22	3.20	4.00	2.60	0.00	100.47
March	121.49	3.92	6.91	2.69	8.00	117.10
April	124.39	4.15	5.22	3.14	0.50	111.57
May	112.65	3.63	4.42	3.02	1.00	113.83
June	107.03	3.57	5.44	2.60	1.25	115.31
July	92.17	2.98	3.82	2.49	0.15	125.50
Aug.	88.47	2.85	3.68	2.40	0.25	125.29
Sept.	85.48	2.85	3.42	2.26	0.25	115.84
Oct.	90.43	2.98	4.51	2.17	0.05	114.04
Nov.	102.78	3.43	4.66	2.64	0.05	103.30
Dec.	100.02	3.19	5.83	2.14	0.69	105.36

<u>TOTAL</u>	1,196.74				12.54	1,355.82
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<u>AVERAGE</u>	99.72	3.31			1.14	112.98
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## APPENDIX II

### POPULATION AND SEWAGE FLOW



\* Metering equipment not properly calibrated in 1965

CITY OF BROCKVILLE - BUTLER'S CREEK - APPENDIX III-A

<u>SAMPLE POINT NO.</u>	<u>DESCRIPTION</u>	<u>DATE</u>	<u>BACTERIOLOGICAL EXAMINATION</u>		<u>5-DAY</u>	<u>SUSPENDED</u>	<u>ANIONIC</u>	<u>PHENOLS</u>	<u>COPPER</u>
			<u>TOTAL COLIFORMS</u>	<u>FAECAL COLIFORMS</u>	<u>BOD</u>	<u>SOLIDS</u>	<u>DETERGENTS</u>	<u>in ppb</u>	<u>as Cu</u>
B-0.0	Butler's Creek at mouth	July 24/69	80,000+	8,000+	1.4	5	-	10	0.0
B-0.0IW	Storm sewer outfall to north side of creek opposite John Street.	July 24/69	80,000+	8,000+	0.8	5	-	3	0.0
B-0.37W	Storm sewer outfall to north side of creek on east side of Beecher St.	July 24/69	80,000+	8,000+	50	40	-	60	-
B-0.38	Butler's Creek at Beecher Street.	July 24/69	80,000+	8,000+	4.0	15	-	5	0.24
		Sept. 4/69	400	32	3.5	10	0.1	-	-
B-0.42 WI	Storm sewer west of Beecher Street	July 24/69	80,000+	8,000+	440	860	-	200	13.1
B-0.47 WI	Storm sewer outfall to west side of creek at south side of Church St.	July 24/69	80,000+	8,000+	1.4	5	-	7	0.53
		Sept. 4/69	2	2	3.0	10	0.1	-	-
B-0.80 WD	Storm sewer to west side of Butler's Creek at Brock St.	July 24/69	80,000+	8,000+	3.5	970	-	0	-
B-0.80	Butler's Creek at Brock St.	July 24/69	10,000	8,000+	2.0	5	-	3	-
		Sept. 4/69	80,000+	8,000+	7.0	15	0.2	-	-
B-0.92 W	Storm sewer outfall to east side of creek-north of Brock Street.	Sept. 4/69	80,000+	8,000+	7.5	5	0.1	-	-
B-1.18 W	Storm sewer outfall to south side of creek-on west side of Perth Street.	Sept. 4/69	80,000+	8,000+	4.5	5	0	-	-
B-1.46	Butler's Creek at Stewart Blvd.,	July 24/69	80,000+	8,000+	7.0	10	-	4	-

<u>SAMPLE POINT NO.</u>	<u>DESCRIPTION</u>	<u>DATE</u>	<u>BACTERIOLOGICAL EXAMINATION</u>		<u>5-DAY BOD</u>	<u>SUSPENDED SOLIDS</u>	<u>ANIONIC DETERGENTS</u>	<u>PHENOLS in ppb</u>	<u>COPPER as Cu</u>
			<u>TOTAL COLIFORMS</u>	<u>FAECAL COLIFORMS</u>					
B-1.51	Butler's Creek upstream from confluence with Buell's Creek	Sept. 4/69	80,000+	8,000+	7.5	5	0.1	-	-
B-1.60 W	Storm sewer outfall to north side of creek on west side of CPR bridge	Sept. 4/69	80,000+	8,000+	30	15	4	-	-
B-1.74 W-I	Storm sewer to north side of creek-on west side of Park Street.	Sept. 4/69	80,000+	8,000+	4.0	30	2.5	7	-
B-1.74 W-I-2	Storm sewer outfall to south side of creek on west side of Park Street.	July 24/69	80,000+	8,000+	19	20	-	90	-
		Sept. 4/69	80,000+	8,000+	-	-	-	-	-
B-1.75	Butler's Creek at Park St.	July 24/69	80,000+	8,000+	1.4	15	-	0	-
		Sept. 4/69	80,000+	4,500	3.0	40	0.1	10	-
B-1.89 W-2	Storm sewer outfall to south side of creek-on west side of Ormond Street.	Sept. 4/69	80,000+	8,000+	2.0	20	0.1	0	-
B-2.67 W	Storm sewer outfall to north side of creek at First Avenue.	Sept. 4/69	80,000+	8,000+	12	60	18	12	0
B-3.00	Butler's Creek at Oxford Avenue.	Sept. 4/69	1,600	300	2.5	50	0.1	0	-

CITY OF BROCKVILLE - BUELL'S CREEK - APPENDIX III-B

<u>SAMPLE POINT NO.</u>	<u>DESCRIPTION</u>	<u>DATE</u>	<u>BACTERIOLOGICAL EXAMINATION</u>	<u>5-DAY</u>	<u>SUSPENDED</u>	<u>ANIONIC</u>	<u>PHENOLS</u>	<u>COPPER</u>	
			<u>TOTAL COLIFORMS</u>	<u>FAECAL COLIFORMS</u>	<u>BOD</u>	<u>SOLIDS</u>	<u>DETERGENTS</u>	<u>In ppb</u>	<u>as Cu</u>
BB-1.51	Buell's Creek at Front Street	July 24/69	14,000+	8,000+	2.0	5	-	7	-
		July 4/69	80,000+	2,500	0.6	70	-	-	-
BB-2.27	Buell's Creek at south side Highway 401	Sept. 4/69	80,000+	1,100	1.2	80	-	-	-

CITY OF BROCKVILLE - BAYVIEW CREEK - APPENDIX III-C

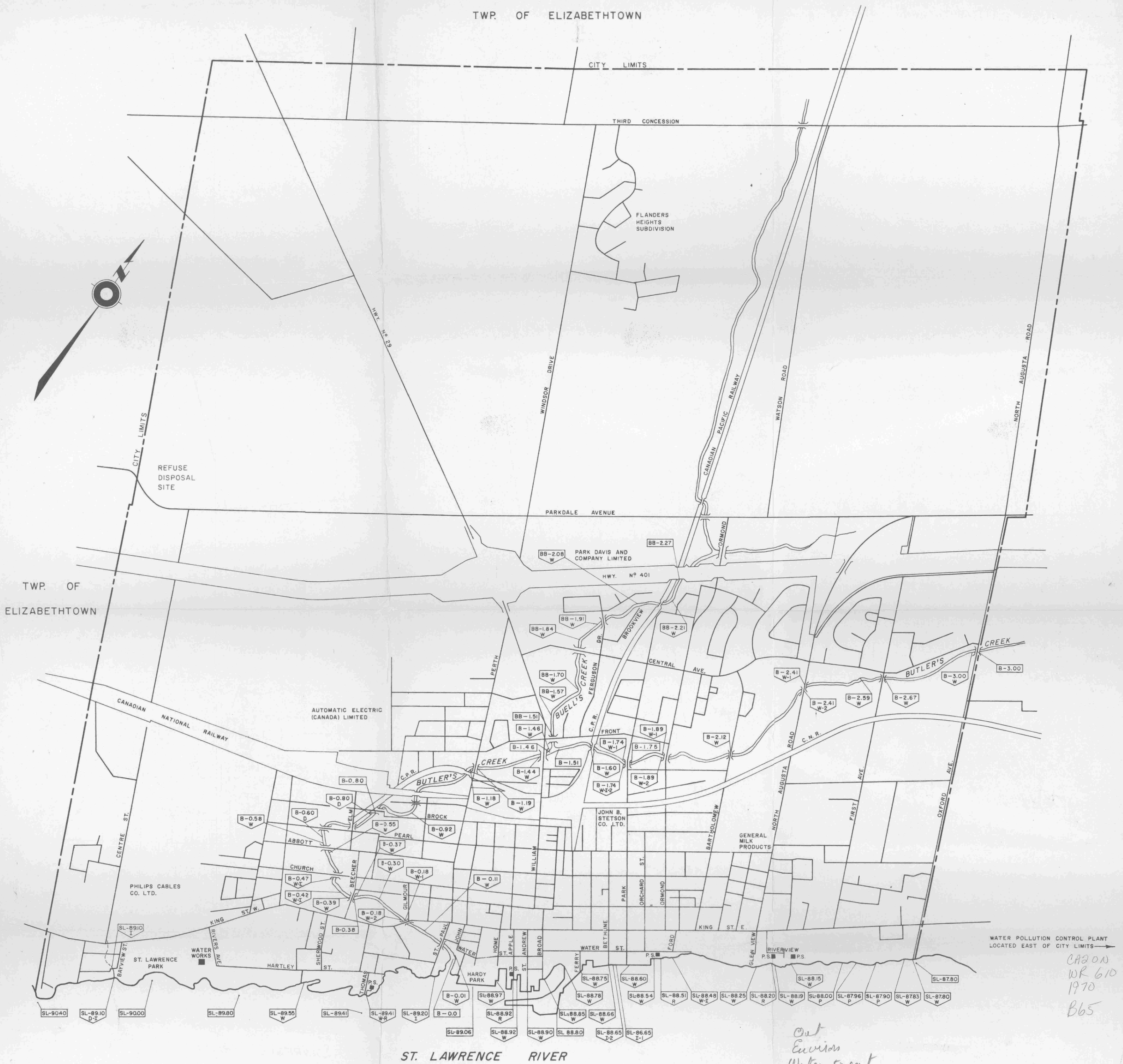
<u>SAMPLE POINT NO.</u>	<u>DESCRIPTION</u>	<u>DATE</u>	<u>BACTERIOLOGICAL EXAMINATION</u>	<u>5-DAY</u>	<u>SUSPENDED</u>	<u>ANIONIC</u>	<u>PHENOLS</u>	<u>COPPER</u>	
			<u>TOTAL COLIFORMS</u>	<u>FAECAL COLIFORMS</u>	<u>BOD</u>	<u>SOLIDS</u>	<u>DETERGENTS</u>	<u>in ppb</u>	<u>as Cu</u>
SL-89.10 D-I	Bayview Creek at Outlet to St. Lawrence River	July 22/69	-	-	-	-	-	2	-
		July 24/69	80,000+	8,000+	1.4	5	-	10	0.0
		July 30/69 (10:30 a.m.)			5.0	15	-	3	-
		July 30/69 (12:30 p.m.)			-	-	-	8	-
		July 30/69 (1:00 p.m.)			-	-	-	6	-
		August 23/69			2.5	10	-	0	0.01
		September 4/69	7,000	26	1.6	5	-	0	0.0
SL-89.10 I	Phillips Cables outfall to Bayview Creek	April 10/69 (9:35 a.m.)			-	30	-	4	3.15
		April 10/69 (10:30 a.m.)			-	100	-	0	75.5
		July 24/69	125	30	0.8	5	-	3	0.0
		July 30/69 (1:00 p.m.)			-	40	-	-	-

CITY OF BROCKVILLE - BUTLER'S CREEK AT HIGHWAY NO. 2 - APPENDIX IV

<u>DATE</u>	<u>Coliform</u> <u>MF/100ml</u>	<u>Water</u> <u>Temp.</u>	<u>D.O.</u> <u>C (ppm)</u>	<u>5-Day</u> <u>BOD</u>	<u>T.Sol.</u> <u>(ppm)</u>	<u>Susp.</u> <u>Sol. (ppm)</u>	<u>Turb.</u> <u>S.U.</u>	<u>T-PO<sub>4</sub></u> <u>(ppm)</u>	<u>S-PO<sub>4</sub></u> <u>(ppm)</u>	<u>Ammonia</u> <u>NH<sub>3</sub>-N</u>	<u>Total</u> <u>Kjel.</u>	<u>Nitrite</u> <u>NO<sub>2</sub>-N</u>	<u>Nitrate</u> <u>NO<sub>3</sub>-N</u>	<u>Chloride</u> <u>Cl</u>
<u>1967</u>														
Feb. 19	0	2.0	11.0	8.4	382	15	-	0.78	0.68	1.88	2.60	0.01	0.30	42.0
Mar. 19	330,000	1.5	-	4.6	21	15	10.5	0.66	0.32	0.89	2.10	0.02	0.34	45.0
Apr. 23	75,000	7.0	10.0	2.6	304	15	5.5	0.30	0.17	0.30	0.98	0.00	0.50	27.0
May 14	55,000	13.0	10.0	2.7	390	15	8.0	0.86	0.69	0.53	1.30	0.01	0.25	36.0
June 18	9,300	17.0	6.0	3.3	342	140	12.0	0.41	0.24	0.30	1.65	0.01	0.50	-
July 25	67,000	23.0	7.0	1.9	388	7	31.0	3.20	1.25	0.13	1.80	0.06	0.22	54.0
Aug. 21	210	22.0	6.0	2.0	360	8	10.0	2.30	0.60	0.30	2.80	0.05	0.20	42.0
Sept. 18	28	-	-	2.2	300	10	4.3	2.90	1.60	0.99	-	7.06	0.00	40.0
Oct. 10	4	15.0	6.0	2.1	400	15	24.0	0.93	0.28	0.59	1.40	0.02	0.20	37.0
Nov. 7	340	5.0	4.0	1.7	344	15	9.0	0.14	0.12	0.23	0.98	0.01	0.20	29.0
Dec. 6	4	0.5	6.0	1.5	320	15	11.5	0.19	0.16	0.33	0.39	0.00	0.10	36.0
<u>1968</u>														
Jan. 22	4	3.0	8.0	2.5	382	15	9.0	1.10	0.37	0.53	0.71	0.01	0.10	58.0
Feb. 6	152	0.0	11.0	1.7	310	9	10.0	0.32	0.20	0.46	1.10	0.01	1.50	47.0
Apr. 3	7,700	5.0	11.0	8.6	266	21	6.5	1.10	0.50	0.26	1.50	0.01	0.02	23.0
Oct. 10	54	16.0	6.0	1.2	330	10	4.0	1.10	0.06	0.86	-	0.05	0.24	42.0
Nov. 5	3,100	9.0	7.0	1.8	342	6	7.0	0.70	0.52	0.41	1.32	0.01	0.24	42.0
<u>1969</u>														
Jan. 22	11,800	2.0	6.0	3.0	340	10	18.0	0.16	0.09	0.44	1.50	0.01	0.48	44.0
Feb. 4	18,000	1.0	11.0	2.5	370	10	8.5	0.12	0.05	0.40	1.40	0.01	0.43	52.0
Mar. 4	14,300	3.0	7.0	4.0	400	20	2.9	0.24	0.15	0.45	1.60	0.01	0.30	52.0
Apr. 29	-	7.0	7.0	2.0	280	10	6.0	0.08	0.06	0.14	1.30	0.01	0.20	-
May 27	-	12.0	9.0	2.0	290	10	6.0	-	-	0.04	0.99	-	-	-
June 10	-	17.0	7.0	2.0	280	10	8.0	0.06	0.05	0.40	0.55	0.00	0.01	29.0
July 8	-	20.0	6.0	3.0	260	10	12.0	0.28	0.11	0.11	0.95	0.02	0.10	29.0



TWP. OF ELIZABETHTOWN



## LEGEND

SL-8941 - SAMPLING POINT SHOWING STREAM AND MILEAGE

B-1.46  
W - STREAM AND MILEAGE AT OUTFALL  
- TYPE OF OUTFALL

## OUTFALL SYMBOL LETTERS

W - STORM SEWER  
D - OPEN DITCH  
R - RELIEF SEWER  
I - INDUSTRIAL WASTE EFFLUENT

P.S. - PUMPING STATION

WATER POLLUTION CONTROL PLANT  
LOCATED EAST OF CITY LIMITSCARON  
WR 610  
1970  
B65

ONTARIO WATER RESOURCES COMMISSION

CITY OF BROCKVILLE

WATER POLLUTION SURVEY

SCALE: 1" = 1,000'

DRAWN BY: A.R.S.

DATE: DEC., 1965

CHECKED BY:

DRAWING NO: 65-153



\*96936000009294\*